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PTO/SB/08A (10-01)

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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 3

Complete if Known

Application Number	09/910,537
Filing Date	JULY 20, 2001
First Named Inventor	REID, J.
Art Unit	2822
Examiner Name	DUONG, K.
Attorney Docket Number	P21-US

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No. 1	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code 2 (if known)			
KBD	AA	US-	4,904,543	02-27-1990	SAKAKIMA et al.	
	AB	US-	5,262,000	11-16-1993	WELBOURNE et al.	
	AC	US-	5,439,754	08-08-1995	IWASAKI et al.	
	AD	US-	5,441,597	08-15-1995	BONNE et al.	
	AE	US-	5,581,436	12-03-1996	SUMMERFELT et al.	
	AF	US-	5,612,574	03-18-1997	SUMMERFELT et al.	
	AG	US-	5,619,393	04-08-1997	SUMMERFELT et al.	
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	AJ	US-	5,665,628	10-09-1997	SUMMERFELT	
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	AR	US-	6,171,970	01-09-2001	XING et al.	
	AS	US-	6,177,351 B1	01-23-2001	BERATAN et al.	
	AT	US-	2001/0008157 A1	07-19-2001	BISHOP et al.	

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FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No. 1	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code 3	Number 4 - Kind Code 5 (if known)				
KBD	BA	EP-	1102329-A2	05-23-2001	MATSUSHITA et al.		

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Considered

11/28/2003

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¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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		Attorney Docket Number	P21-US
Sheet	3	of	3

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials ¹	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
KBD ↓	CL	LINDER et al., "Ternary Ta-Si-N Films for Sensors and Actuators", Sens. Actuators A, Phys. (Switzerland), Vol. A61 No. 1-3 (1997), pp. 387-391. ✓	
	CM	NICOLET et al., "Highly Metastable Amorphous or Near-Amorphous Ternary Films (Mictamict Alloys)", Microelectronic Engineering, Vol. 55 (2001), pp. 357-367. ✓	
	CN	NICOLET, M., "Reactively Sputtered Ternary Films of the Type TM-Si-N and their Properties (TM = Early Transition Metal)", Vacuum, Vol. 59 (2000), pp. 716-720. ✓	
	CO	OIZUMI et al., "Control of Crystalline Structure and Electrical Properties of TaSiN Thin Film Formed by Reactive RF-Sputtering", Jpn. J. Appl. Phys., Vol. 39 (2000), pp. 1291-1294. ✓	
	CP	PINNOW et al., "Decomposition and Nanocrystallization in Reactively Sputtered Amorphous Ta-Si-N Thin Films", J. Appl. Phys., Vol. 90 No. 4 (Aug. 15, 2001), pp. 1986-1991. ✓	
	CQ	SUN et al., "Reactively Sputtered Ti-Si-N Films I: Physical Properties", J. Appl. Phys., Vol. 81 No. 2 (Jan. 15, 1997), pp. 656-663. ✓	
	CR	SUN et al., "Reactively Sputtered Ti-Si-N Films II: Diffusion Barriers for Al and Cu Metallizations on Si", J. Appl. Phys., Vol. 81 No. 2 (Jan. 15, 1997), pp. 664-671. ✓	
	CS	WONG et al., "Barriers for Copper Interconnections", from the website of the Interconnect Focus Center at Stanford University (May 4, 1999). ✓	

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Examiner Signature	<i>John L. B. Drury</i>	Date Considered	11/28/2003
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Sheet	2	of	3	Attorney Docket Number	P21-US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
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KED	CA	BRIZOUAL et al., "Experimental Study of Ti-Si-N Films Obtained by Radio Frequency Magnetron Sputtering", Surface and Coatings Technology 116-119 (1999), pp. 922-926.	
	CB	CHERRY et al., "Stability of Conducting Amorphous Ru-Si-O Thin Films Under Oxygen Annealing", Microelectronic Engineering 55 (2001), pp. 403-408.	
	CC	DUBOIS, P., "Electrostatically Actuated Gas Microvalve Based on a Ta-Si-N Membrane", from the website of The Sensors, Actuators and Microsystems Laboratory at University of Neuchâtel, Switzerland (publication date unknown; accessed and printed July 2, 2001).	
	CD	EISENBRAUN et al., "Low Temperature Inorganic Chemical Vapor Deposition of Ti-Si-N Diffusion Barrier Liners for Gigascale Copper Interconnect Applications", J. Vac. Sci. Technol. B, Vol. 18 No. 4 (July/Aug 2000).	
	CE	GASSER et al., "Reactively Sputtered Ru-Si-O Films", Journal of Applied Physics, Vol. 86 No. 4 (Aug. 15, 1999).	
	CF	GRETILLAT et al., "Surface-Micromachined Ta-Si-N Beams for Use in Micromechanics", J. Micromech. Microeng., Vol. 8 (1998), pp. 88-90.	
	CG	HAUERT et al., "From Alloying to Nanocomposites -- Improved Performance of Hard Coatings", Advanced Engineering Materials, Vol. 2 No. 5 (2000), pp. 247-259.	
	CH	HE et al., "Letter to the Editor: Bonding Structure and Properties of Ion Enhanced Reactive Magnetron Sputtered Silicon Carbonitride Films", J. Phys.: Condens. Matter, Vol. 12 (2000), pp. L591-597.	
	CI	HERDT et al., "PVD Copper Barrier/Seed Processes: Some Considerations for the 0.15 um Generation and Beyond", Semiconductor Fabtech, 11th Edition (1999), pp. 259-264.	
	CJ	KIM et al., "Nanostructured Ta-Si-N Diffusion Barriers for Cu Metallization", J. Appl. Phys., Vol. 82 No. 10 (Nov 15, 1997), pp. 4847-4851.	
	CK	LEE et al., "Characterization of Tantalum Nitride Films Deposited by Reactive Sputtering of Ta in N ₂ /Ar Gas Mixtures", Materials Chemistry and Physics, Vol. 68 (2001), pp. 266-271.	

Examiner Signature		Date Considered	11/28/2003
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